Amendments to the Drawings

Replacement sheets for Figures 5A-5G and 6 have been submitted with this paper to overcome the drawing objections.

REMARKS

Claims 1-3, 5, and 7-23 are pending. Claims 1, 2, 5, and 7-10 have been amended, claims 4 and 6 have been canceled without prejudice or disclaimer, and new claims 11-23 have been added to recite additional features of the invention.

Reconsideration of the application is respectfully requested for the following reasons.

I. Objections to the Drawings.

The following amendments have been made to overcome the drawing objections:

1) Figure 5D has been amended to show bulkhead 517.

2) Figure 5F has been amended to identify the bulkhead by reference numeral 517.

3) Figure 5G has been amended to show sealant 518 and seal cover 519 and corresponding portions of the specification have been amended to reflect these changes.

Additional amendments to the drawings have been made to more closely conform the drawings to the specification. No new matter has been added. Replacement sheets incorporating the drawing amendments have been submitted with this paper. Applicants respectfully submit that these amendments are sufficient to overcome the drawing objections.

II. Objections to the Specification and Abstract.

The specification has been amended to correct the typographical errors noted on pages 3 and 4 of the Office Action, and claim 4 has been canceled to obviate the antecedent-based

objection. Additional amendments to the specification have also been made to conform this section of the application to the drawings and claims as originally filed. No new matter has been added. The Abstract has been amended to remote the word "disclosed" therefrom.

Applicants respectfully submit that these changes are sufficient to overcome the objections to the specification and abstract.

III. The Rejection under 35 USC § 112, Second Paragraph.

Claims 2 and 4-7 were rejected for being vague and indefinite. Claims 2, 5, and 7 have been amended to provide antecedent bases for the terms identified on page 5 of the Office Action, and claims 4 and 6 have been canceled. Applicants respectfully submit that these amendments are sufficient to overcome the § 112 rejection.

IV. The Rejection under 35 USC §§ 102(e) and 103(a).

Claims 1-3 and 6 were rejected for being anticipated by the Park reference, and claims 1-10 were rejected for being obvious in view of a Tai-Park combination. These rejections are traversed for the following reasons.

The Park publication is a published U.S. patent application. As such, its effective filing date when used as a reference is its U.S. filing date, taking into consideration any claims to domestic priority under 35 USC §§ 119(e) and 120. (See MPEP § 2136). A published U.S. patent application may be antedated under the provisions of MPEP § 201.15 by filing the following: (1)

an English translation of a certified copy of the foreign priority document and (2) a statement indicating that the translation is accurate.

The Park publication has an effective U.S. filing date of **September 26, 2003**. In accordance with the provisions of MPEP § 215.01, Applicant has filed with this paper (1) an English translation of a certified copy of Korean Patent Application No. 2003-0024103 filed on **April 16, 2003** and to which foreign priority was claimed in the original application papers, and (2) a statement indicating that the translation is accurate. It is respectfully submitted that the filing of these papers is sufficient to antedate the Park publication, thereby removing Park as a reference against the claims in the present application.

With the Park publication removed, it is respectfully submitted that claims 1-3, 5, and 7-10 are allowable. Removal of the §§ 102(e) and 103(a) rejections is therefore respectfully requested.

V. New Claims.

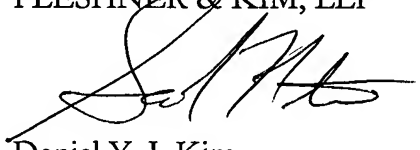
New claims 11-23 have been added to the application. Applicants respectfully submit that with the removal of the Park publication as a reference, claims 11-21 are in allowable condition.

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and timely allowance are respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,

FLESHNER & KIM, LLP



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CERTIFICATE OF VERIFICATION

I, Yong Yeon KIM of 648-23 Yeoksam-dong, Gangnam-gu, Seoul, Republic of Korea state that the attached document is a true and complete translation to the best of my knowledge of the Korean-English language and that the writings contained in the following pages are correct English translation of the specification and claims of the Korean Patent Application No. 10-2003-0024103 dated this 16th day of April, 2003.

·Date: Aug, 07, 2006

·Signature of translator: _____

Yong Yeon KIM

<Translation>

THE KOREAN INTELLECTUAL PROPERTY OFFICE

This is to certify that the following application annexed hereto is a true copy from the records of the Korean Intellectual Property Office.

Application Number:	10-2003-0024103
Date of Application:	April 16, 2003
Applicant(s):	LG Electronics Inc.

On this 17th day of March, 2004

COMMISSIONER

APPLICATION FOR PATENT REGISTRATION

Application Number: 10-2003-0024103

Application Date: April 16, 2003

Title of Invention: METHOD FOR MANUFACTURING ORGANIC EL DISPLAY PANEL

Applicant (s): LG Electronics Inc.

Attorney Name: KBK & Associates

Inventor(s): 1. Chang Nam KIM

The above Application for Patent Registration is hereby made pursuant to Articles 42 and 60 of the Korean Patent Law.

[ABSTRACT OF THE DISCLOSURE]

[ABSTRACT]

A method for manufacturing an organic EL display panel is disclosed, to prevent a sealant from being injected into an emitting cell, to thereby improve the yield, in which the organic EL display panel is formed by adhering a substrate to a seal-cover using a sealant, the substrate provided with the emitting cell including an ITO strip, a supplement electrode, an organic EL layer, and a cathode strip; and main bulkheads formed in a strip type for insulation of the cathode strip, wherein the method includes forming a supplement bulkhead to prevent the sealant from being injected into the emitting cell between the main bulkheads.

[TYPICAL DRAWING]

FIG. 4G

[INDEX]

organic EL, sealing, bulkhead

[SPECIFICATION]

[TITLE OF THE INVENTION]

METHOD FOR MANUFACTURING ORGANIC EL DISPLAY PANEL

[BRIEF DESCRIPTION OF THE DRAWINGS]

FIGs. 1A to 1D are plan views of illustrating a method for manufacturing an organic EL display panel according to the related art.

FIG. 2 is a cross section view along A line of FIG. 1D.

FIG. 3 is a cross section view along B line of FIG. 1D.

FIGs. 4A to 4G are plan views of illustrating a method for manufacturing an organic EL display panel according to the preferred embodiment of the present invention.

FIG. 5 is an expanded view of a supplement bulkhead of FIG. 4D.

FIG. 6(a) to 6(f) illustrates supplement bulkheads in various shapes according to the present invention.

Description of reference numerals for main parts in the drawings

11: glass substrate	12, 12-1: ITO strip
13: supplement electrode	14: insulating film
15: main bulkhead	15-1: supplement bulkhead
16: organic EL layer	17: cathode strip
18: sealant	18-1: sealant injected along the bulkhead
19: seal-cover	

[DETAILED DESCRIPTION OF THE INVENTION]

[OBJECT OF THE INVENTION]

[FIELD OF THE INVENTION AND DISCUSSION OF THE RELATED ART]

The present invention relates to a display panel, and more particularly, to a method for manufacturing an organic EL display panel to prevent a sealant from being injected into an emitting cell on sealing.

Recently, a technology of an organic electro-luminescence (EL) device referred to as a light emitting diode (LED) has been rapidly studied, and some products using the above technology are made.

The organic EL device may be formed thinly in a matrix type, and the EL device may be driven by a low voltage below 15V.

Also, the organic EL device is suitable for a next-generation flat panel (FPD) display in that the organic EL device has a wide viewing angle, and can be formed on a flexible transparent substrate. Unlike a liquid crystal display (LCD) device which requires a backlight, the organic EL device doesn't require the backlight, whereby it is possible to decrease power consumption.

Hereinafter, a method for manufacturing the organic EL device according to the related art will be explained as follows.

FIGs. 1A to 1C are plan views of illustrating a method for manufacturing an organic EL display panel according to the related art.

First, as shown in FIG. 1A, an ITO strip 2 of a transparent electrode for applying an anode is formed on a glass substrate 1. At this time, another ITO strip 2-1 is also formed at a portion corresponding to an end of a cathode strip, wherein the ITO strips 2 and 2-1 are formed at the same time, and the ITO strip 2-1 is connected with the cathode

strip so as to extract a metal line with ease. After that, a supplement electrode (not shown) is formed on a predetermined portion of the ITO strips 2 and 2-1.

Thereon, an insulating film 4 is formed, and a bulkhead 5 is formed for insulation of the cathode strip.

As shown in FIG. 1B, an organic EL layer 6 including a hole transport layer, an emitting layer, and an electric transport layer is formed thereon.

Then, as shown in FIG. 1C, an upper electrode 7 is formed of Mg-Ag compound metal, and Al or other conductive material.

The organic EL device is weak in moisture and oxygen. Thus, as shown in FIG. 1D, a seal cover 9 is adhered to the glass substrate 1 by using a sealant 8. As shown in the drawings, since the sealant 8 is in contact with the bulkhead 5, the sealant 8 may be injected into an emitting cell along the bulkhead 5.

FIG. 2 is a cross section view along A line of FIG. 1D, and FIG. 3 is a cross section view along B line of FIG. 1D, wherein it is shown that the sealant 8-1 is injected to the emitting cell along the bulkhead 5. Accordingly, the sealant 8-1 has bad effects on the cathode strip 7 and the organic EL layer 6, thereby causing the defective device and lowering the yield.

[TECHNICAL TASKS TO BE ACHIEVED BY THE INVENTION]

Accordingly, the present invention is directed to a method for manufacturing an organic EL display panel that substantially obviates one or more problems due to limitations and disadvantages of the related art.

An object of the present invention is to provide a method for manufacturing an organic EL display panel in which it is possible to prevent a sealant from being injected

into an emitting cell, thereby improving the yield.

[PREFERRED EMBODIMENTS OF THE INVENTION]

To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a method for manufacturing an organic EL display panel, which is formed by adhering a substrate to a seal-cover using a sealant, the substrate provided with an emitting cell including an ITO strip, a supplement electrode, an organic EL layer, and a cathode strip; and main bulkheads in a strip type for insulation of the cathode strip, comprises forming a supplement bulkhead to prevent a sealant from being injected into an emitting cell between the main bulkheads.

Preferably, the supplement bulkhead is formed at a portion between the emitting cell and the sealant.

Preferably, the supplement bulkhead and the main bulkhead are formed at the same time.

Hereinafter, a method for manufacturing an organic EL display panel according to the present invention will be explained with reference to the accompanying drawings.

FIGs. 4A to 4G are plan views of illustrating a method for manufacturing an organic EL display panel according to the present invention.

First, as shown in FIG. 4A, an ITO strip 12 of a transparent electrode for applying an anode is formed on a glass substrate 12. At this time, another ITO strip 12-1 is also formed at a portion corresponding to an end of a cathode strip, wherein the ITO strips 12 and 12-1 are formed at the same time, and the ITO strip 12-1 is connected with the cathode strip so as to extract a metal line with ease.

Then, as shown in FIG. 4B, a supplement electrode 13 is formed on a predetermined portion of the ITO strips 12 and 12-1. The supplement electrode 13 is formed of a metal material having a smaller resistance than that of the ITO, for example, Cr, Al, Cu, W, Au, Ni, or Ag.

As shown in FIG. 4C, an insulating film 14 is formed of insulating organic or inorganic material. As shown in FIG. 4D, a main bulkhead 15 is formed in a stripe shape, for insulating of the cathode strip.

At this time, a supplement bulkhead 15-1 is formed at a predetermined interval from an emitting cell, so as to prevent a sealant from being injected into the emitting cell along the main bulkhead 15.

FIG. 5 is an expanded view of the supplement bulkhead, wherein the supplement bulkhead is formed at a distance 'a' from the emitting cell, is formed in a length of 'b', and is formed inside by a distance 'c' from the end of the main bulkhead 15 (a, b, $c > 0$).

FIG. 6(a) to 6(f) illustrates supplement bulkheads in various shapes according to the present invention. As shown in FIG. 5, the supplement bulkhead 15-1 is formed in shape of a square. In addition, as shown in FIG. 6(a) to 6(d), the supplement bulkhead 15-1 may have an angle d or d' with respect to the main bulkhead 15. Also, as shown in FIG. 6(e), the supplement bulkhead 15-1 may be formed in shape of semi-circle. As shown in FIG. 6(f), the supplement bulkhead 15-1 may be formed in a multi-structure.

Next, as shown in FIG. 4E, an organic EL layer 16 including a hole transport layer, an emitting layer, and an electric transport layer is formed.

Subsequently, as shown in FIG. 4F, an upper electrode 17 is formed of Mg-Ag compound metal, and Al or other conductive material. At this time, a distance between the upper electrode 17 and the supplement bulkhead 15-1 is set as a predetermined value (e) or more.

Then, as shown in FIG. 4G, a seal cover 19 is adhered to the glass substrate 11 by using the sealant 18. At this time, as shown in a portion 'C', even though the sealant 18 flows along the main bulkhead 15, it is possible to prevent the sealant 18 from being injected into the emitting cell by using the supplement bulkhead 15-1.

[ADVANTAGES OF THE INVENTION]

As mentioned above, the method for manufacturing the organic EL display panel according to the present invention has the following advantages.

In the method for manufacturing the organic EL display panel according to the present invention, the supplement bulkhead is additionally formed for being connected with the end of the main bulkhead. Thus, even though the sealant flows along the main bulkhead, the supplement bulkhead prevents the sealant from being injected into the emitting cell, thereby preventing the defective device, and improving the yield.

It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the inventions. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

What is claimed is:

1. A method for manufacturing an organic EL display panel, which is formed by adhering a substrate to a seal-cover using a sealant, the substrate provided with an emitting cell including an ITO strip, a supplement electrode, an organic EL layer, and a cathode strip; and main bulkheads in a strip type for insulation of the cathode strip, comprising:

forming a supplement bulkhead to prevent a sealant from being injected into the emitting cell between the main bulkheads.

2. The method of claim 1, wherein the supplement bulkhead is formed at a portion between the emitting cell and the sealant.

3. The method of claim 1, wherein the supplement bulkhead and the main bulkhead are formed at the same time.

[DRAWINGS]

FIG. 1A

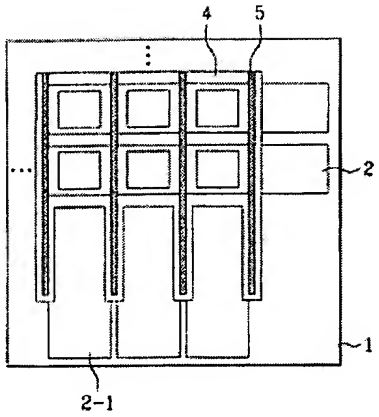

FIG. 1B

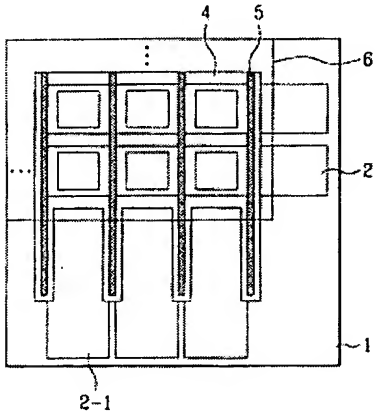

FIG. 1C

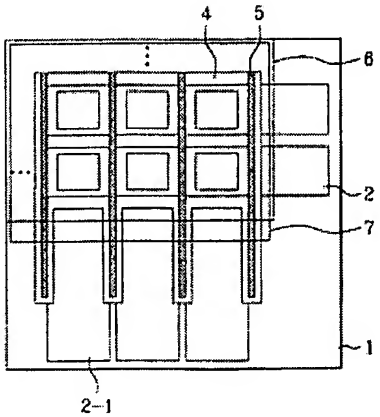

FIG. 1D

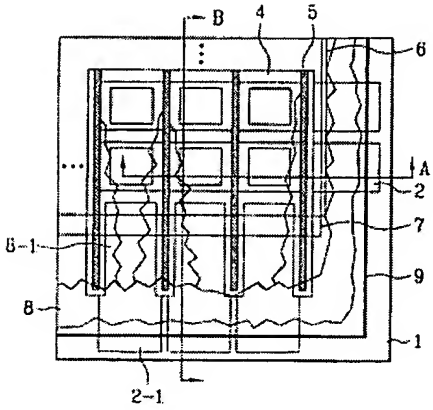

FIG. 2

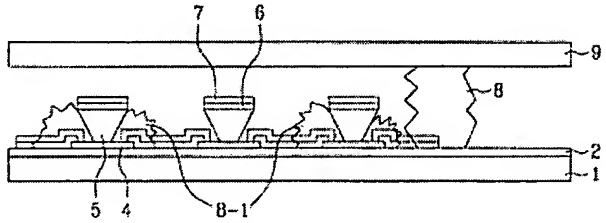

FIG. 3

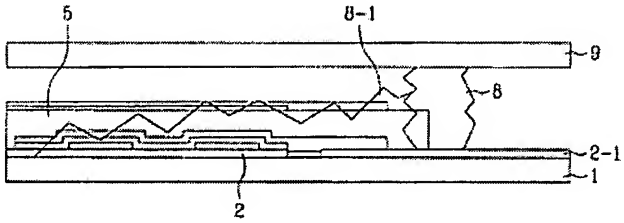

FIG. 4A

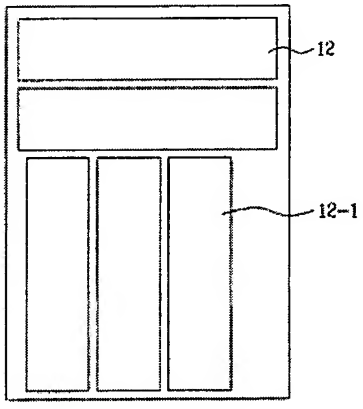

FIG. 4B

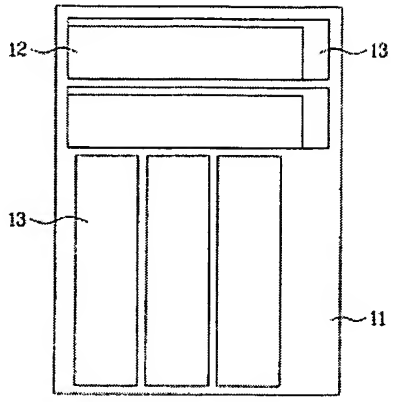

FIG. 4C

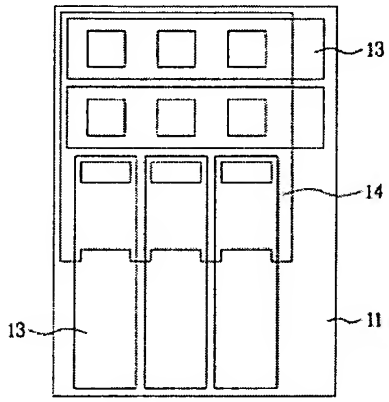

FIG. 4D

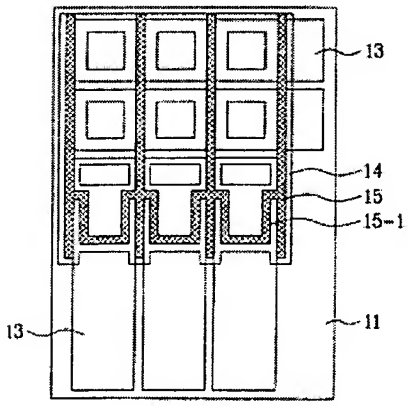

FIG. 4E

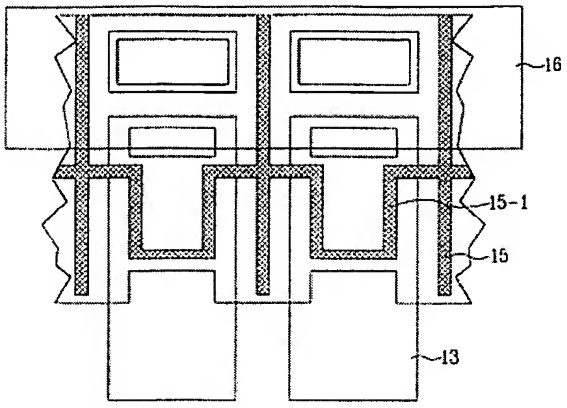

FIG. 4F

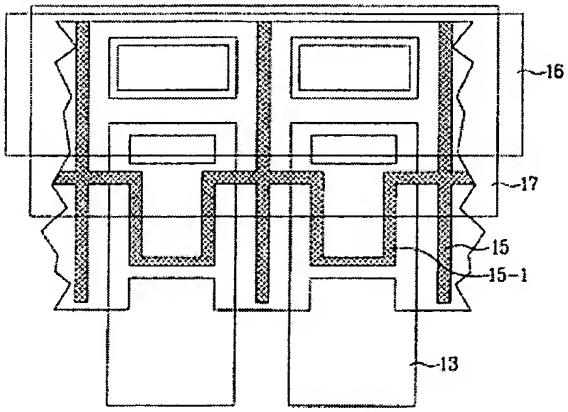

FIG. 4G

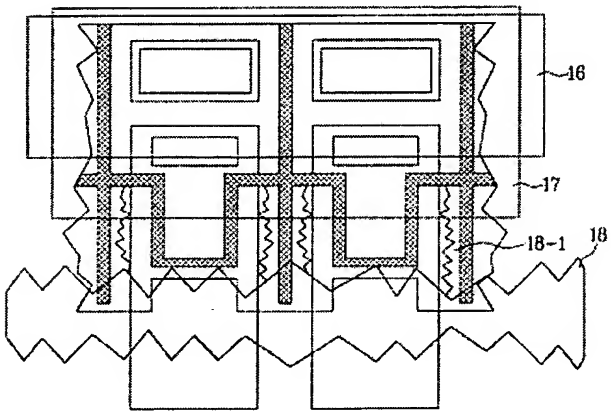

FIG. 5

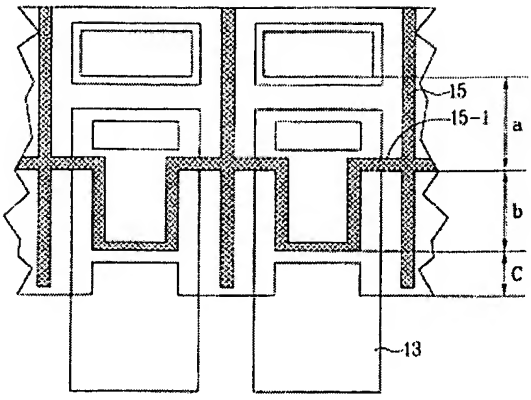

FIG. 6